ABSTRACT OF THE DISCLOSURE

An ophthalmic surgery system and method for treating presbyopia by performing ablative photodecomposition of the corneal surface. The offset image of a variable aperture, such as a variable width slit and variable diameter iris diaphragm, is scanned in a preselected pattern to perform ablative sculpting of predetermined portions of a corneal surface. The scanning is performed to ablate an optical zone sized to match the patient pupil with a peripheral transition zone outside the pupil. The shape of the ablated optical zone is different from the shape of the final optical correction on the anterior surface of the cornea. The optical zone corrects for near-vision centrally and far-vision peripherally. A movable image displacement mechanism enables radial displacement and angular rotation of the profiled beam exiting from the variable aperture. The invention enables wide area treatment with a laser having a narrower beam than the treatment area, and can be used in the treatment of many conditions in conjunction with presbyopia such as hyperopia, hyperopic astigmatism and irregular refractive aberrations.